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 Grabov, V.M.; Uryupin, O.N.; Komarov, V.A.;
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 May 24-28, 1998 Page(s):138 - 140
[AbstractPlus](#) | Full Text: [PDF](#)(220 KB) IEEE CNF
- ☐ **2. Fabrication of piezoelectric ceramic/polymer composites by injection molding**
 Bowen, L.J.; French, K.W.;
 Applications of Ferroelectrics, 1992. ISAF '92., Proceedings of the Eighth IEEE Interna
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 30 Aug.-2 Sept. 1992 Page(s):160 - 163
[AbstractPlus](#) | Full Text: [PDF](#)(548 KB) IEEE CNF
- ☐ **3. Coprime receding horizon feedback control of hot isostatic pressing**
 Meyer, D.G.; Wadley, H.N.G.;
 Control Applications, 1992., First IEEE Conference on
 13-16 Sept. 1992 Page(s):362 - 367 vol.1
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- ☐ **4. Critical behavior of ultrasonic wave velocities in porous piezoelectric ceramics**
 Craciun, F.; Guidarelli, G.; Galassi, C.; Roncari, E.;
 Ultrasonics Symposium, 1997. Proceedings., 1997 IEEE
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- ☐ **5. Dielectric properties of strontium hexaferrite in microwave, infrared and far infra**
 Nikolic, P.M.; Zivanov, L.D.; Aleksic, O.S.;
 Dielectric Materials, Measurements and Applications, 1988., Fifth International Confere
 27-30 Jun 1988 Page(s):332 - 335
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1984. (INZZ) Densification of sintered lead zirconate titanate by hot isostatic pressing.

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6212332, A1999-10-8120E-003; 19990401.

TitleNear-net-shape forming of 316L stainless steel **powder** under hot isostatic **pressing**.**Author(s)**[Jeon-Y-C](#); [Kim-K-T](#).**Author affiliation**

Dept of Mech Eng, Pohang Inst of Sci & Technol, South Korea.

Source

International-Journal-of-Mechanical-Sciences (UK), vol.41, no.7, p.815-30, July 1999. , Published: Elsevier.

CODEN

IMSCAW.

ISSN

ISSN: 0020-7403, CCCC: 0020-7403/99/ (\$20.00).

Availability

SICI: 0020-7403(199907)41:7L:815:NSF3; 1-2

Electronic Journal Document Number: S0020-7403(98)00053-8.

Publication year

1999.

Language

EN.

Publication type

J Journal Paper.

Treatment codes

T Theoretical or Mathematical; X Experimental.

Abstract

Near-net-shape forming of 316L stainless steel **powder** is investigated under hot isostatic **pressing** (HIPing). A stainless steel **powder** compact and an insert were encapsulated by a stainless steel container and hot isostatically pressed to produce an **axisymmetric** near-net-shape part. To simulate densification and deformation of a **powder** compact in the container during HIPing, the constitutive model of Abouaf et al. (1988), and that of McMeeking and co-workers (1992) were implemented into a finite element analysis. The thickness effect of the container on densification was also studied for the **axisymmetric** part during HIPing. Densification of a three-dimensional asymmetric part during HIPing

was also investigated by comparing finite element calculations with experimental data by Eisen et al. (1997). (13 refs).

Descriptors

austenitic-stainless-steel; deformation; densification; encapsulation;
finite-element-analysis; forming-processes; hot-pressing; powder-metallurgy; powders.

Keywords

near net shape forming; 316L stainless steel **powder**; hot isostatic **pressing**; HIPing; stainless steel **powder** compact; insert; encapsulation; stainless steel container; **axisymmetric** near net shape part; densification; deformation; **powder** compact; constitutive model; finite element analysis; thickness effect; **axisymmetric** part; three dimensional asymmetric part; finite element calculations.

Classification codes

A8120E (**Powder** techniques, compaction and sintering).

A8120G (Preparation of metals and alloys (compacts, pseudoalloys)). A8140L (Deformation, plasticity and creep).

A6220F (Deformation and plasticity).

Chemical indexing

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4691624, A9415-8120E-001, C9408-7320-007; 940615.

TitleFinite element simulation of hot isostatic **pressing** of metal powders.**Author(s)**Jinka-A-G-K; Lewis-R-W.**Author affiliation**

Inst of Numerical Methods in Eng, Univ Coll of Swansea, UK.

Source

Computer-Methods-in-Applied-Mechanics-and-Engineering (Netherlands), vol.114, no.3-4, p.249-72, April 1994.

CODEN

CMMECC.

ISSN

ISSN: 0045-7825, CCCC: 0045-7825/94/ (\$07.00).

Publication year

1994.

Language

EN.

Publication type

J Journal Paper.

Treatment codes

P Practical.

Abstract

A finite element simulation of hot isostatic **pressing** of metal powders is studied using a mixed formulation method having velocity and pressure as nodal variables. A review of various methodologies formulated for the finite element modeling of hot isostatic **pressing** of powders is also presented. The constitutive relations considered are based on the theory of plasticity for **powder** material under the framework of hot deformations to model the creep behaviour of the **powder** material. The material behaviour of the container is modeled by incompressible plasticity via a power-law creep formulation. The extra constraints imposed in the **axisymmetric** approximation are eliminated by adapting suitable shape functions. The various material properties are assumed to be functions of temperature and relative density. The thermomechanical behaviour of powders is effectively modeled by a nonlinear transient heat transfer model, which is presented. A computational procedure for coupling the

mechanical deformation with a thermal analysis is also addressed. The application of the methodology is illustrated via the simulation of cylindrical **powder** metallurgy parts. (40 refs).

Descriptors

digital-simulation; finite-element-analysis; hot-pressing; mechanical-engineering-computing; physics-computing; powder-metallurgy.

Keywords

finite element simulation; hot isostatic **pressing**; metal powders; mixed formulation method; velocity; pressure; nodal variables; constitutive relations; plasticity; **powder** material; hot deformations; creep behaviour; incompressible plasticity; power law creep formulation; **axisymmetric** approximation; shape functions; thermomechanical behaviour; nonlinear transient heat transfer model; computational procedure; mechanical deformation; thermal analysis; cylindrical **powder** metallurgy parts.

Classification codes

A8120E (Powder techniques, compaction and sintering).
A0260 (Numerical approximation and analysis).
C7320 (Physics and Chemistry).
C6185 (Simulation techniques).
C7440 (Civil and mechanical engineering).
C3355 (Manufacturing processes).

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4341099, A9306-8120J-004; 930203.

TitleModels for inelastic deformation of particles associated with hot **pressing** of metal matrix composites.**Author(s)**Tszeng-T-C; Ohriner-E-K; Sikka-V-K.**Author affiliation**

Metals & Ceramics Div, Oak Ridge Nat Lab, TN, USA.

Source

Transactions-of-the-ASME-Journal-of-Engineering-Materials-and-Technology (USA), vol.114, no.4, p.422-31, Oct. 1992.

CODEN

JEMTA8.

ISSN

ISSN: 0094-4289.

Publication year

1992.

Language

EN.

Publication type

J Journal Paper.

Treatment codes

T Theoretical or Mathematical.

Abstract

During fabrication of fiber reinforced metal-matrix composites by hot **pressing**, fiber breakage due to particles impingement during consolidation of fiber/particle system is very common. In studying the fiber breakage, one of the main issues is the interactions between fibers and particles during consolidation. The authors investigated the problem of fiber/particle interactions by examining a unit problem consisting of a deformable particle and a cylinder. An engineering model for **axisymmetric** deformation of a particle induced by a rigid sphere was developed first and then extended to the interactions between a deformable particle and a rigid cylinder. The calculations were compared with experiments on lead balls, good agreement was observed. The model was then applied to determining the maximum bending stress in fibers using the simple beam theory. A safe criterion for preventing fibers from breaking was found. (33 refs).

Descriptors

composite-material-interfaces; deformation; densification; fibre-reinforced-composites; hot-pressing; powder-metallurgy.

Keywords

fiber particle interaction; inelastic deformation; hot **pressing**; fabrication; fiber reinforced metal matrix composites; fiber breakage; consolidation; bending stress.

Classification codes

A8120J (Dispersion-, fibre-, and platelet-reinforced metal-based

composites).

A8120E (**Powder** techniques, compaction and sintering).

A8140L (Deformation, plasticity and creep).

A6220F (Deformation and plasticity).

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1378270, A79066022; 790000.

TitleDistribution of pressure and density in **axisymmetric** compacts produced by **pressing** in rigid dies.**Author(s)**Zhdanovich-G-M; Yakubovskii-Ch-A.**Author affiliation**

Polytech Inst, Minsk, Byelorussian SSR, USSR.

Source**Soviet-Powder-Metallurgy-and-Metal-Ceramics** (USA), vol.16, no.12, p.944-9, Dec. 1977.

Translation of: Poroshkovaya-Metallurgiya (Ukrainian SSR), vol.16, no.12, p.47-53, Dec. 1977.

CODEN

PMANAI, CODEN of Translation: SPMCAV.

ISSN

ISSN: 0032-4795, ISSN of Translation: 0038-5735.

Publication year

1977.

Language

EN.

Publication type

J Journal Paper.

Treatment codes

T Theoretical or Mathematical; X Experimental.

Abstract

An examination is made of problems of pressure and density distribution in the **pressing** of **axisymmetric** compacts in rigid dies. A new method is proposed for the mathematical analysis of the fundamental quantitative regularities of pressure and density distribution in **axisymmetric** compacts, which enables a general solution of the problem under consideration to be obtained. Results of experimental investigations confirm the validity of the theoretical conclusions reached. (7 refs).

Descriptorspowder-technology; sintering.**Keywords****axisymmetric** compacts; **pressing** in rigid dies; density distribution; mathematical analysis; pressure distribution; sintered **powder** compacts.

Classification codes

A8120E (**Powder** techniques, compaction and sintering).

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1 [Natural phenomena: Animation and control of breaking waves](#)

Viorel Mihalef, Dimitris Metaxas, Mark Sussman

 August 2004 **Proceedings of the 2004 ACM SIGGRAPH/Eurographics symposium on Computer animation**

 Full text available: pdf(501.64 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Controlling fluids is still an open and challenging problem in fluid animation. In this paper we develop a novel fluid animation control approach and we present its application to controlling breaking waves. In our *Slice Method* framework an animator defines the shape of a breaking wave at a desired moment in its evolution based on a library of breaking waves. Our system computes then the subsequent dynamics with the aid of a 3D Navier-Stokes solver. The wave dynamics previous t ...

2 [The APL theory of human vision](#)

Gérard A. Langlet

 August 1994 **ACM SIGAPL APL Quote Quad , Proceedings of the international conference on APL : the language and its applications: the language and its applications**, Volume 25 Issue 1

 Full text available: pdf(1.89 MB) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#), [review](#)

3 [Full papers: Computational schemes for biomimetic sculpture](#)

Brower Hatcher, Karl Aspelund, Andrew Willis, Jasper Speicher, David B. Cooper, Frederic F. Leymarie

 April 2005 **Proceedings of the 5th conference on Creativity & cognition**

 Full text available: pdf(3.02 MB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

A prototype system for the automatic evolution of biomimetic structures using structural automata is described and its utility for generating digital sculpture is demonstrated. Sculptures are generated from a primordial shape which is represented in terms of a triangular mesh and sculpture is created by extending the original surface using tetrahedral structural elements. Recursively applicable rules or equivalently, automata, are defined which allow the sculptor to generate a volumetric scaffold ...

Keywords: 3D modeling, 3D shape representation, biomimetic sculpture, deformable surface models, virtual sculpting

4 Computer aided input/output for use with the finite element method of structural analysis

Robert D. Rockwell, Daniel S. Pincus

June 1970 **Proceedings of the 7th workshop on Design automation**

Full text available:  [pdf\(737.49 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

The enormous computational ability of modern computers has encouraged development of the finite element method of structural analysis. However, preparing the large amount of input data and interpreting the large amount of output data generated by the analysis can be very time consuming and costly. For this reason, the computer programs IDLZ and ØSPL were developed. IDLZ divides a plane surface into triangular elements and generates required input data for the analysis program. &Oslas ...

5 Special issue on word sense disambiguation: Topical clustering of MRD senses based on information retrieval techniques

Jen Nan Chen, Jason S. Chang

March 1998 **Computational Linguistics**, Volume 24 Issue 1

Full text available:  [pdf\(2.08 MB\)](#)  Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#)
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This paper describes a heuristic approach capable of automatically clustering senses in a machine-readable dictionary (MRD). Including these clusters in the MRD-based lexical database offers several positive benefits for word sense disambiguation (WSD). First, the clusters can be used as a coarser sense division, so unnecessarily fine sense distinction can be avoided. The clustered entries in the MRD can also be used as materials for supervised training to develop a WSD system. Furthermore, if t ...

6 The space between: fine art and technology

Will Tait


February 1998 **ACM SIGGRAPH Computer Graphics**, Volume 32 Issue 1

Full text available:  [pdf\(1.23 MB\)](#) Additional Information: [full citation](#), [index terms](#)

7 Smoke simulation for large scale phenomena

Nick Rasmussen, Duc Quang Nguyen, Willi Geiger, Ronald Fedkiw

July 2003 **ACM Transactions on Graphics (TOG)**, Volume 22 Issue 3

Full text available:  [pdf\(687.57 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

In this paper, we present an efficient method for simulating highly detailed large scale participating media such as the nuclear explosions shown in figure 1. We capture this phenomena by simulating the motion of particles in a fluid dynamics generated velocity field. A novel aspect of this paper is the creation of highly detailed three-dimensional turbulent velocity fields at interactive rates using a low to moderate amount of memory. The key idea is the combination of two-dimensional high reso ...

Keywords: Kolmogorov spectrum, incompressible Navier-Stokes equations, smoke, wind fields

8 PELLPACK: a problem-solving environment for PDE-based applications on multicomputer platforms

E. N. Houstis, J. R. Rice, S. Weerawarana, A. C. Catlin, P. Papachiou, K.-Y. Wang, M. Gaitatzes
March 1998 **ACM Transactions on Mathematical Software (TOMS)**, Volume 24 Issue 1

Full text available:  [pdf\(26.30 MB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#), [review](#)

The article presents the software architecture and implementation of the problem-solving environment (PSE) PELLPACK for modeling physical objects described by partial differential equations (PDEs). The scope of this PSE is broad, as PELLPACK incorporates many PDE solving systems, and some of these, in turn, include several specific PDE solving methods. Its coverage for 1D, 2D, and 3D elliptic or parabolic problems is quite broad, and it handles some hyperbolic problems. Since a PSE should p ...

Keywords: PDE language, execution models, knowledge bases, libraries, parallel reuse methodologies, problem-solving environments, programming-in-the-large, software bus

9 [An updated survey of GA-based multiobjective optimization techniques](#)

Carlos A. Coello

June 2000 **ACM Computing Surveys (CSUR)**, Volume 32 Issue 2

Full text available:  [pdf\(250.77 KB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)


After using evolutionary techniques for single-objective optimization during more than two decades, the incorporation of more than one objective in the fitness function has finally become a popular area of research. As a consequence, many new evolutionary-based approaches and variations of existing techniques have recently been published in the technical literature. The purpose of this paper is to summarize and organize the information on these current approaches, emphasizing the importance ...

Keywords: artificial intelligence, genetic algorithms, multicriteria optimization, multiobjective optimization, vector optimization

10 [The selenium rectifier: a non-linear and asymmetric resistance element](#)

Norm Hardy

May 1952 **Proceedings of the 1952 ACM national meeting (Pittsburgh)**

Full text available:  [pdf\(647.94 KB\)](#) Additional Information: [full citation](#)

11 [The computer bowl](#)

Karen A. Frenkel

February 1989 **Communications of the ACM**, Volume 32 Issue 1

Full text available:  [pdf\(2.21 MB\)](#)

Additional Information: [full citation](#), [index terms](#)

12 [Direct and intuitive input device for 3-D shape deformation](#)

Tamotsu Murakami, Naomasa Nakajima

April 1994 **Proceedings of the SIGCHI conference on Human factors in computing systems: celebrating interdependence**

Full text available:  [pdf\(1.20 MB\)](#)

Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

Keywords: computer graphics, computer-aided design, free-form deformation, human interface, input device

13 Twister: a space-warp operator for the two-handed editing of 3D shapes ☐

Ignacio Llamas, Byungmoon Kim, Joshua Gargus, Jarek Rossignac, Chris D. Shaw
July 2003 **ACM Transactions on Graphics (TOG)**, Volume 22 Issue 3

Full text available:  [pdf\(2.99 MB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

A free-form deformation that warps a surface or solid may be specified in terms of one or several point-displacement constraints that must be interpolated by the deformation. The Twister approach introduced here, adds the capability to impose an orientation change, adding three rotational constraints, at each displaced point. Furthermore, it solves for a space warp that simultaneously interpolates two sets of such displacement and orientation constraints. With a 6 DoF magnetic tracker in each ha ...

Keywords: displacement and orientation constraints, free-form deformation, two-handed interaction

14 2-2 VRC in engineering: Spline-based volumetric modeling and printing for bioceramic implants ☐

R. A. Yan, H. N. Cheang, F. Lin

June 2004 **Proceedings of the 2004 ACM SIGGRAPH international conference on Virtual Reality continuum and its applications in industry**

Full text available:  [pdf\(3.17 MB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

This paper presents an integrated system for bioceramic implant modeling and printing. To actualize the concept of "Made-to-order implants - customized body parts", Spline based volumetric modeling, new approaches and applications of volumetric modeling and Rapid Prototyping in medical implant, is effective in constructing/reconstructing the normal and defective bone structures and to interface the constructed/reconstructed medical models for rapid prototyping. The feasibility of using the 3DP t ...

Keywords: bioceramic, biocomposite implant, spline-based volumetric modeling, three-dimensional printing

15 Exploring interactive curve and surface manipulation using a bend and twist sensitive input strip ☐

Ravin Balakrishnan, George Fitzmaurice, Gordon Kurtenbach, Karan Singh

April 1999 **Proceedings of the 1999 symposium on Interactive 3D graphics**

Full text available:  [pdf\(716.04 KB\)](#)

Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

Keywords: 3D modeling, ShapeTape, bimanual input, curves, gestures, input devices, interaction techniques, surfaces

16 Bender: a virtual ribbon for deforming 3D shapes in biomedical and styling applications ☐

Ignacio Llamas, Alexander Powell, Jarek Rossignac, Chris D. Shaw

June 2005 **Proceedings of the 2005 ACM symposium on Solid and physical modeling**

Full text available:  [pdf\(873.92 KB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

In contrast to machined mechanical parts, the 3D shapes encountered in biomedical or styling applications contain many tubular parts, protrusions, engravings, embossings, folds,

and smooth bends. It is difficult to design and edit such features using the parameterized operations or even free-form deformations available in CAD or animation systems. The Bender tool proposed here complements previous solutions by allowing a designer holding a 6 DoF 3D tracker in each hand to control the position an ...

Keywords: 6 DOF tracker, adaptive subdivision, biarc, deformation, space-warp

17 Session 7: Shape segmentation using local slippage analysis ☐

Natasha Gelfand, Leonidas J. Guibas

July 2004 **Proceedings of the 2004 Eurographics/ACM SIGGRAPH symposium on Geometry processing**

Full text available:  pdf(282.14 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

We propose a method for segmentation of 3D scanned shapes into simple geometric parts. Given an input point cloud, our method computes a set of components which possess one or more slippable motions: rigid motions which, when applied to a shape, slide the transformed version against the stationary version without forming any gaps. Slippable shapes include rotationally and translationally symmetrical shapes such as planes, spheres, and cylinders, which are often found as components of scanned mec ...

18 Tapping vs. circling selections on pen-based devices: evidence for different performance-shaping factors ☐

Sachi Mizobuchi, Michiaki Yasumura

April 2004 **Proceedings of the SIGCHI conference on Human factors in computing systems**

Full text available:  pdf(340.47 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)


Tapping-based selection methods for handheld devices may need to be supplemented with other approaches as increasingly complex tasks are carried out using those devices. Circling selection methods (such as the Lasso) allow users to select objects on a touch screen by circling with a pen. An experimental comparison of the selection time and accuracy between a circling method and a traditional tapping style of selection was carried out. The experiment used a two dimensional grid (varying in terms ...

Keywords: gesture input, handheld devices, input and interaction technologies, pen user interface, target selection

19 Manual and cognitive benefits of two-handed input: an experimental study ☐

Andrea Leganchuk, Shumin Zhai, William Buxton

December 1998 **ACM Transactions on Computer-Human Interaction (TOCHI)**, Volume 5 Issue 4

Full text available:  pdf(537.49 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

One of the recent trends in computer input is to utilize users' natural bimanual motor skills. This article further explores the potential benefits of such two-handed input. We have observed that bimanual manipulation may bring two types of advantages to human-computer interaction: manual and cognitive. Manual benefits come from increased time-motion efficiency, due to the twice as many degrees of freedom simultaneously available to the user. Cognitive benefits arise as a result of reducing ...

Keywords: bimanual input, input devices, two-handed input

20 Special section: Reasoning about structure, behavior and function ☐

B. Chandrasekaran, Rob Milne

July 1985 **ACM SIGART Bulletin**, Issue 93

Full text available:  [pdf\(5.13 MB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#)

The last several years' of work in the area of knowledge-based systems has resulted in a deeper understanding of the potentials of the current generation of ideas, but more importantly, also about their limitations and the need for research both in a broader framework as well as in new directions. The following ideas seem to us to be worthy of note in this connection.

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